

INSTALLATION and OPERATING INSTRUCTIONS



Built Better to Last Longer

S150 **ADD-ON FURNACE**

READ AND UNDERSTAND THESE INSTRUCTIONS
BEFORE OPERATING YOUR SUMMERAIRE FURNACE

SAVE THESE INSTRUCTIONS FOR REFERENCE

THIS FURNACE MUST BE INSTALLED AND SERVICED BY A QUALIFIED INSTALLER
AND WHERE REQUIRED BY LAW, A LICENCED TECHNICIAN.

SUMMERAIRE MFG.
PETERBOROUGH, ONTARIO

FOR SERVICE CALL:

NAME : _____

ADDRESS : _____

TELEPHONE : _____

Installation Instructions

The S-150 "Summerraire" Add-On wood burning furnaces are assembled. Your installer will be required to do some wiring.

Before Installation Check the Following:

1. Examine the chimney to insure that it has the capacity and draft conditions to handle the furnace. This furnace must be vented into (a) a masonry chimney conforming to Provincial regulations or in the absence of such regulations, to the requirements of The National Building Code, OR local codes and regulations, OR (b) a factory built chimney labelled THAT IT COMPLIES TO ULC S629-M.
2. Do not connect this furnace to a chimney serving a gas appliance.
3. An 8" connection into the chimney must be provided. This 8" connection must be located below the connection into the chimney from any existing oil heating unit only.
4. Check the proposed location for the furnace and make sure that the furnace will not be in violation of any of the minimum clearances from combustible materials.
5. a) The S-150 woodburning add-on unit is certified to be used in conjunction with an existing oil fired furnace having a firing rate of .75 GPH to .85 GPH (U.S.). This unit is not certified for connection to any other units.

b) The S-150 woodburning add-on unit is certified to be used in conjunction with an existing gas fired furnace having a gas input shown on the original nameplate, between 112500 minimum and 132000 maximum B.T.U.H. and 23-38°C (70-100°F) air temperature rise.
6. CAUTION: Maintain combustion air to both furnaces - air starvation is dangerous.
7. A fresh air opening of at least 120 in. shall be provided. This shall be the larger of the values required for openings in CGA Standard CAN1-B149.1, installations code for natural gas burning appliances and equipment, or CAN1-B149.2, installation code for propane burning appliances and equipment, for tight structures, or that required by C.S.A. Standard CAN3-B365, installation code for solid fuel burning appliances equipment.
8. CERTIFIED FOR SERIES CONNECTION TO THE OUTLET ONLY OF AN EXISTING OIL OR GAS FIRED FURNACE.
9. If series method of interconnecting duct is used and the existing oil or gas furnace is equipped with plenum

mounted fan limit control, the divider panel which you install must be a minimum of 5" above the fan limit control element casing. Divider panel must be reasonably air-tight.

10. Series method of interconnecting duct should only be considered if the "Inline" flow installation cannot be made.
11. Air flow through existing furnace shall be determined before any changes are made to system:
 1. Run oil or gas furnace at least 10-15 minutes or until furnace has come up to maximum temperature.
 2. Using thermometers determine temperature in R.A. entering furnace and temperature in S.A. plenum. Temperature rise through furnace is determined by subtracting the temperature in R.A. plenum from temperature in S.A. plenum. Temperature rise should be a maximum 85°F or that specified by manufacturer of furnace.

* There can be long lags in obtaining readings on thermometers. The thermometers should be checked by observing the time required for correct temperature indication when they are immersed in boiling water.

Note: Accurate and "Easy to Read" dial thermometers are to be used, with a minimum insertion of 12".

Minimum Clearances from Combustible Materials

Flue Pipe	18 in.
One Side	24 in.
Other Side	6 in.
Rear	24 in.
Front	48 in.

Plenum and first 6 feet of Duct - 6 in. from combustible ceiling.

The floor on which the furnace will sit must be non-combustible.

12. The operation of the gas furnace must be verified for acceptable operation before and after installation of the add-on appliance by a gas fitter that is recognized by the regulatory authority.
13. Do not connect to any gas furnace that has not been certified initially as complying to CGA Standard CAN1-2-3-M84 or its precedents.
14. Do not connect to any furnace that is not equipped with an air circulation blower.

IT IS VERY IMPORTANT TO ADHERE TO THE MINIMUM INSTALLATION CLEARANCES TO ENSURE A SAFE INSTALLATION.

Installation

Before installation is started read and make sure that you understand these instructions.

1. Inspect unit to ensure that it has not been damaged in transit.
2. Remove electric controls and Instruction Envelope shipped inside firebox.
3. Install plenums and ductwork in accordance with Duct Diagram included in these instructions.
4. Do not connect duct work so that a reverse flow is possible.
5. "BX" type cable used for wiring between existing oil furnace and S-150 add-on, shall be installed with 1" "stand-offs" to prevent it from coming in contact with the S-150 casing.
6. The S-150 Summeraire add-on unit shall only be installed on a furnace duct system and chimney which are in good operating condition.
7. Do not use duct elbows having an inside radius of less than 6".
8. Do not relocate or bypass any of the safety controls in the original furnace installation.
9. The blower in the oil or gas fired furnace shall not be changed.
10. To obtain the required air flow or temperature rise through the system, the blower and motor pulleys and the blower motor may have to be changed. Current flow through motor is to be maintained within name plate rating.
11. Install Limit Control Bracket as shown on assembled drawing using all holes provided. Make sure this bracket is installed on the upper front of casing, furthest from interconnecting duct. Install the prewired fan and limit Controls factory set at 280°F in hole provided nearest side of furnace and install fan and limit control Factory set at 200°F, in hole furthest from side of furnace regardless of right or left hand location of said mounting bracket.
12. Equipment shall be installed in a manner acceptable to the Regulatory Authority and only by mechanics experienced in such installations. When required by the Authority, such mechanics shall be licensed.
13. A separate thermostat must be installed and a new wire run to control this furnace.

Control Settings

Room Thermostat should be set in the 65°F to 70°F range.

Wood fan and limit control setting - 280°F (Factory Set)
Secondary oil limit control setting - 200°F (Factory Set)

Circulation fan blower off at 155°F (cuts in blower fan when temperature is reached).

Circulation fan blower off at 110°F (blower fan cuts out when heat exchanger is cooled below this setting).

High limit cut out 280°F closes draft damper door when heat exchanger reaches this temperature. Draft at chimney should be between .05 and .08 inches water column.

The C.S.A. Certified Draft Regulator supplied must be installed and set at .06" W.C.

WARNING: If the draft regulator setting of .06 W.C. is exceeded, it could cause a solid fuel fire to burn out-of-control.

The damper door on the S-150 has an opening limited to 1/2" by a tab and screw arrangement. This is the maximum that this furnace is designed to fire at. Any tampering of this will cause an out-of-control fire.

After Installation Check

Turn on electrical power to the unit. Set thermostat below room temperature. The damper door should be shut.

Set thermostat higher than room temperature. Damper door should be open.

Push in the button on the Honeywell fan limit control and the circulation blower fan motor should come on. Return the button to the auto position for firing.

When all these checks are O.K. you must now fire the furnace following the operating instructions and check the following:

Check that the circulation fan blower comes on when the furnace reaches a temperature of 155°F.

Check that the damper door closes when the house reaches the desired temperature.

Check that the blower fan motor shuts off when the furnace temperature drops below 110°F.

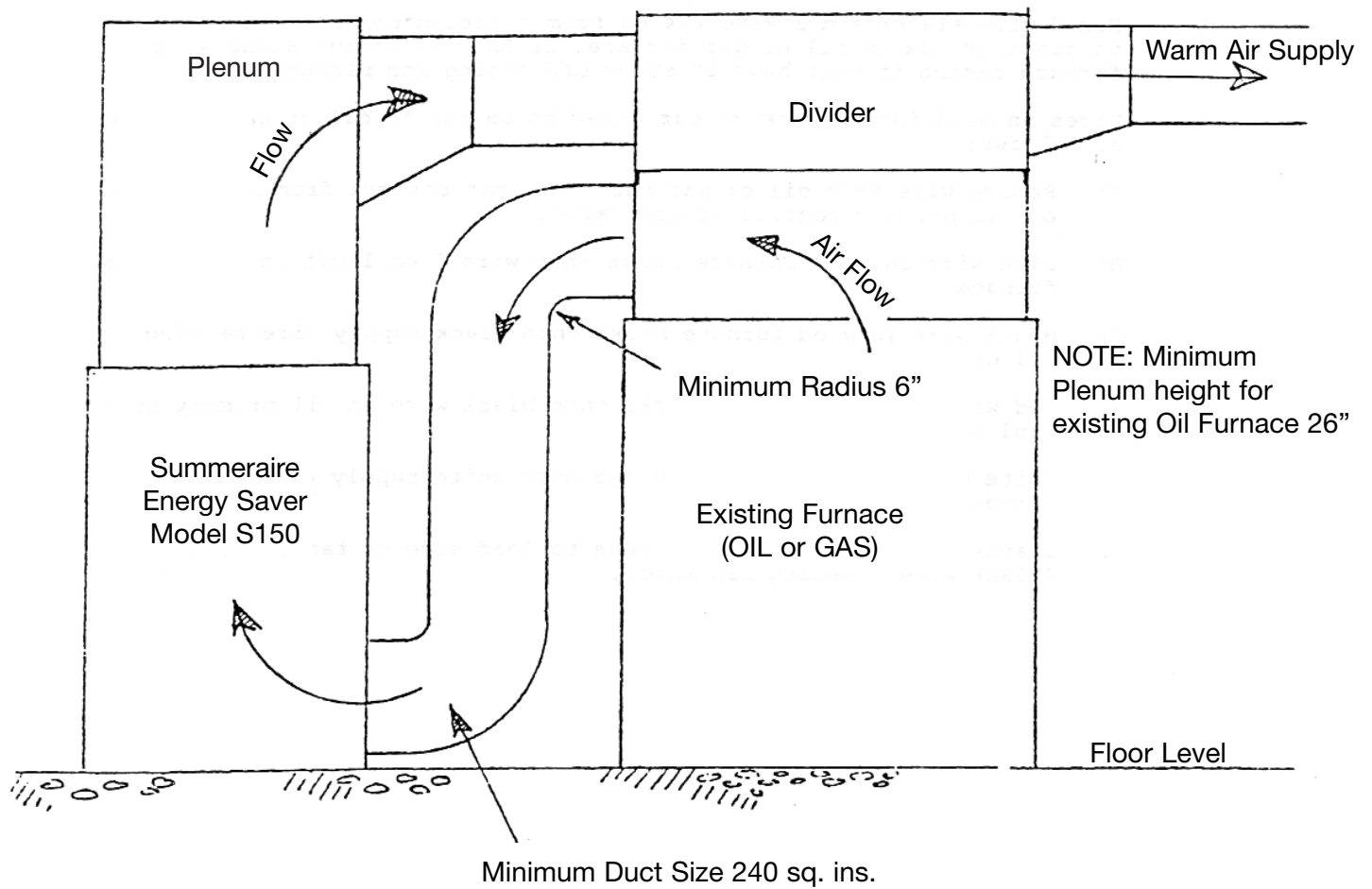
When you have completed the initial start up tests and are satisfied that the system is functioning properly you must now fully explain the operating of the unit to your customer. You must give your customer both the Installation and Owner's Operation Instructions and caution him as to the safety practices which he must comply with.

Testing

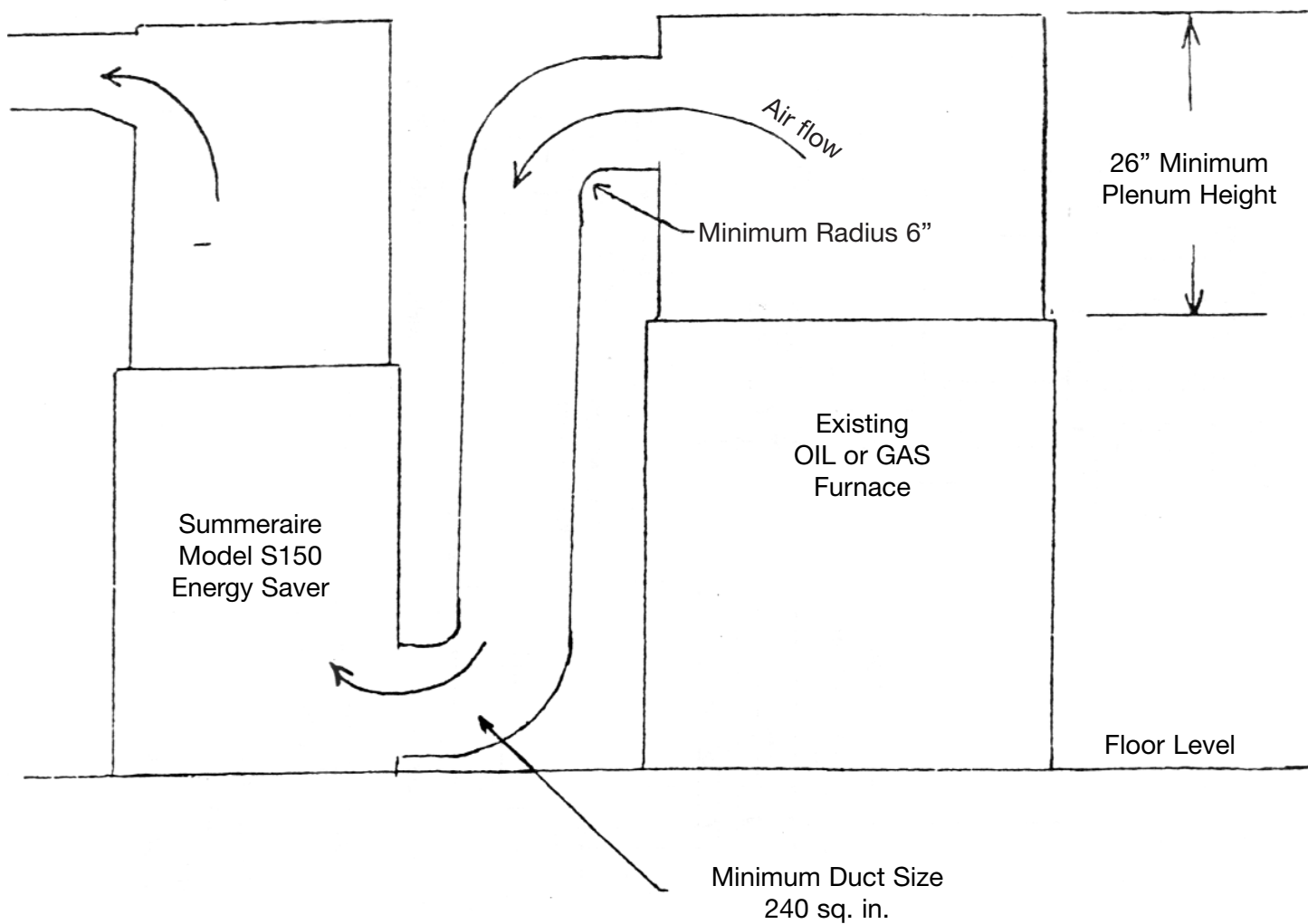
All "Summerraire" furnaces are factory tested to ensure reliability of welding; air streams tests have been conducted to minimize primary surface temperatures and ensure efficient air circulation.

Instructions for Control Wiring S-150

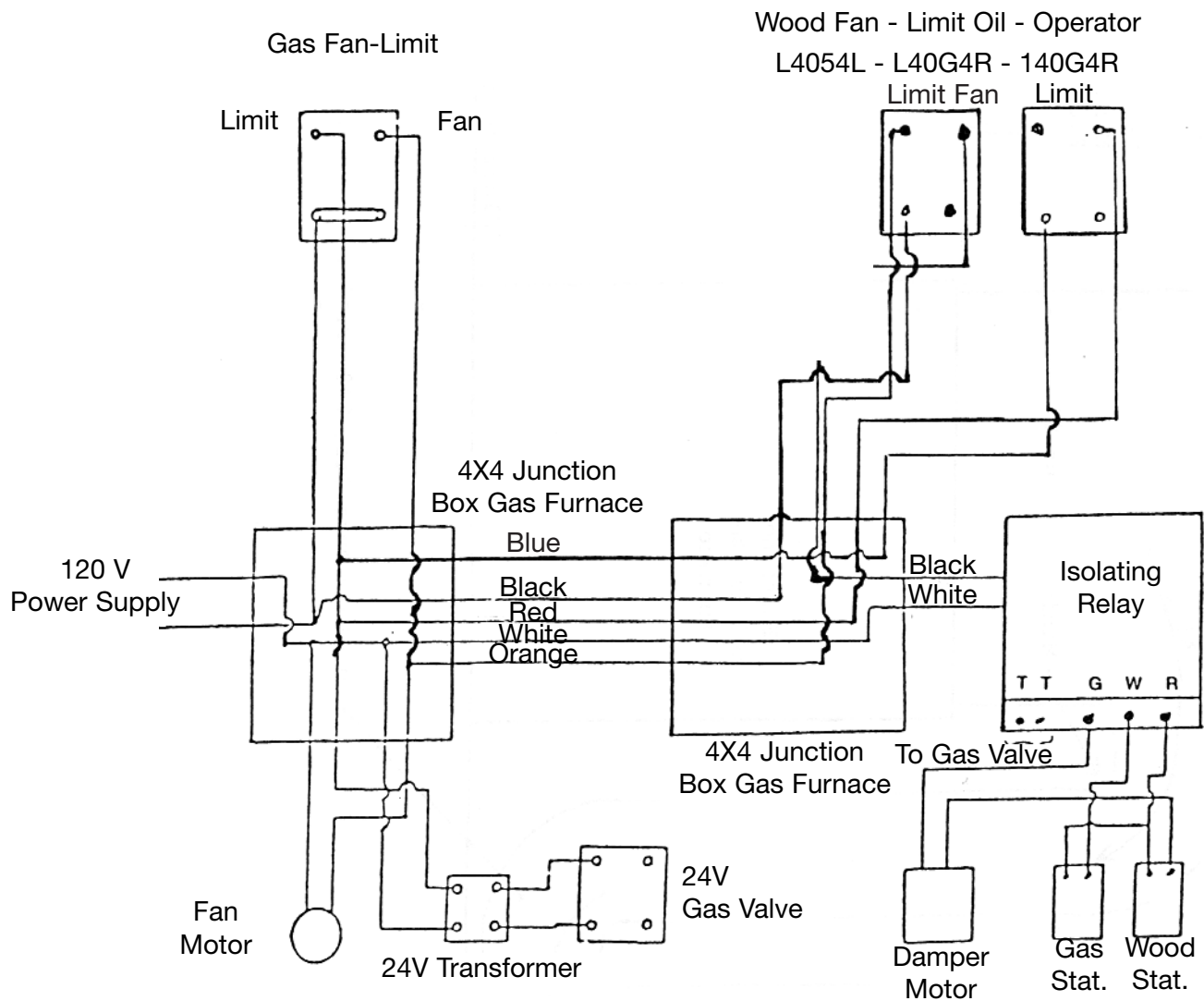
1. Mount prewired junction box and controls on wood furnace.
2. Remove isolating relay from junction box.
3. Run 3 wire #14 BX and 2 wire #14 BX from junction box on wood furnace to junction box on oil or gas furnace. If BX wire is run along wood furnace casing it must have 1" stand off casing and plenum.
4. Wires in wood furnace are colour coded to be run to oil or gas furnace as follows:
 - A) Remove wire from oil or gas furnace limit control from black wire on oil primary control or gas valve.
 - B) Blue wire in wood furnace hooks onto wire from limit on oil or gas furnace.
 - C) Black wire in wood furnace hooks onto black supply wire feeding oil or gas furnace.
 - D) Red wire in wood furnace hooks onto black wire on oil primary control or gas valve.
 - E) White wire in wood furnace hooks onto white supply wire in oil furnace or gas furnace.
 - F) Orange wire in wood furnace runs to load side or fan control (Black wire) feeding fan motor.



"SERIES" FLOW INSTALLATION METHOD



INLINE FLOW INSTALLATION METHOD



WIRING DIAGRAM FOR ADD - ON TO GAS FURNACE ONLY

NOTE:

Remove existing thermostat wires.
Hook these wires to terminals
W & R on Isolating relay.
Run a thermostat wire from TH & TH on Gas Valve

S-150 Summaire ADD - ON Furnace

Finally

We stress that it is your obligation to see that:

1. Owner receives -

A) "Owner's Operating Instructions"

B) This set of Installation Instructions

2. That installation is made in accordance with C.S.A. Installation Standard B 365 or the National Building Code OR Local Codes and regulations.

NOTE: If changes are made to the installation of a gas furnace, including clearances for servicing, these changes shall comply with CGA Standard CAN1-B149.1 or CAN1-B149.2

3. Oil furnace is to be installed to C.S.A. Standard B 139

4. Owner is fully instructed in operating furnace, and in all procedures necessary to ensure its complete and safe operation.

5. The enclosed card must be filled out completely and attached in a visible manner to the S-150 unit.

Limited Warranty S150

Summerraire Mfg. warrants, on a limited basis, this furnace to be free from defects in manufacturing as follows:

- 1) The Heat Exchanger is warranted for a period of 10 years as detailed below.
- 2) Electric controls, oil burner and outside casing (or jacket) are warranted for a period of 1 year from date of installation. (Copy of Bill of Sale must be provided to confirm installation date).

HEAT EXCHANGER LIMITED 10 YEAR WARRANTY

Cost to owner of replacement heat exchanger expressed as a percentage of the retail price in effect at the time of shipment of the replacement heat exchanger.

First 5 years after date of original installation

0% (replaced no charge)

From year 5 through year 6

20%

From year 6 through year 7

40%

From year 7 through year 8

50%

From year 8 through year 9

60%

From year 9 through year 10

80%

From year 10 and over

100%

The foregoing warranty applies only where installation has been made in full accordance with Federal and Local Laws and Codes or ordinances applying to installation of wood or combination wood / oil warm air furnaces, and failure is not caused by abuse, or failure to observe proper operating instructions and cleaning suggestions accompanying the furnace; furnace has been fired with the proper type of fuel and maintained in accordance with our instructions; furnace has not been fired at an output in excess of its rated or designed capacity; furnace has been installed where standard or normal atmosphere prevails and the unit is not subject to excessive humidity, dust conditions, or chemical atmosphere of any type or kind which may cause accelerated metal corrosion. In Canada this furnace must be installed in accordance with the most current edition of CSA B140 and CSAB365-M91.

Warranty extends only to the repair or replacement of parts returned, freight prepaid, to our facilities in Peterborough, Ontario, and which prove defective after inspection and testing by us. Any labour involved in diagnostics, repair or replacement is excluded from this warranty and Summerraire Mfg. assumes no responsibility for consequential damages of any kind to persons or property.

The following forms part of this warranty and is intended to elaborate on specific points of our Limited Warranty: Warranty on above model will be denied as per the following:

- Rusting of secondary heat exchanger where obvious cause is improper cleaning; particularly at the end of each heating season to prevent damp creosote from attacking the heat exchanger material; or, a defective or improperly installed humidifier leaking water onto the heat exchanger.
- Warpage and cracking above the indicated solid fuel firing line.

Note: Your furnace requires periodic cleaning throughout the heating season. Also; at the end of the heating season your furnace must be completely cleaned including all areas of the secondary heat exchanger where creosote residue may accumulate and attract moisture from damp basement areas.

Remember, the warranty of this specified it covers the materials and workmanship of the unit. It does not cover damage resulting from improper firing practices or maintenance procedures.

Please follow our instructions and keep your unit operating at peak efficiency and keep the warranty on your unit valid.

A heat exchanger replaced under warranty, assumes only the remaining unexpired portion of the 10 year Limited Warranty period, determined by the date of original installation.

This is the ONLY warranty applicable to this Summerraire furnace.

S-150 “Summerraire” Add-on Furnace

Read these instructions carefully and completely before firing your unit. They spell out clearly your responsibilities in operating the unit. This furnace has been designed to give you safe and efficient operation for years when properly maintained and cleaned.

We urge you to fill out and return the warranty card promptly in order to validate your warranty.

This unit is designed to be installed and serviced by a qualified person only.

OWNER’S OPERATING INSTRUCTIONS

The S-150 energy saver Add-On is a wood burning furnace designed to give you heat automatically to the temperature you select on the room thermostat. The S-150 add-on is intended to be used as an add-on furnace used in conjunction with and the duct work connected to your existing oil-fired or gas-fired heating system.

The furnace requires hand firing and attention by you to ensure satisfaction and safety in its operation.

Cautions

Burn wood only (unsafe to fire with coal).

Do not use chemicals or fluids to start the fire.

Never fire with treated wood, or burn garbage, gasoline, naptha or engine oil.

Never load wood in firebox higher than half way up the door.

Do not store combustibles within the minimum installation clearances.

Build a small intense fire at least once a day to reduce creosote build up.

Clean chimney at least once a year, and inspect regularly for creosote build up.

For safety keep fire charging door tightly closed.

Do not adjust electrical control settings or blower pulley arrangement.

Operate the oil-fired or gas-fired unit periodically to ensure that it will operate satisfactorily when needed.

Keep fire door closed and maintain all seals in good condition.

Make sure adequate combustion air is provided in furnace area.

The S-150 Add-On is not to be used with an automatic stoker.

Firing

Star the fire in your wood burning furnace with paper and kindling only.

Crumple a quantity of paper and place it in the bottom of the fire box.

Randomly stack kindling on top of the paper allowing for good combustion and air circulation.

Set your thermostat so that it is 7-10 degrees fahrenheit higher than room temperature. This will open the draft damper allowing combustion air into the furnace.

Light the paper and close the fire charging door.

When the kindling is burning well put in some hardwood and allow this to begin burning.

Add hardwood;

Do not fill the firebox above the firing line (halfway up the door). Do not put in too much wood at one time during initial start-up as you could smother the fire.

When fire has been established properly, set thermostat to your desired setting. The thermostat controlling the add-on unit should be set at 5° above the oil or gas furnace thermostat at 18° C (65°F) and the add-on unit thermostat at 21°C (70°F).

Maintaining Fire

You will be required to maintain the fire in your wood burning furnace manually.

The rate at which you have to charge your furnace will vary with the size of house, type of wood and weather conditions.

When the fire in your wood burning furnace is not great enough to properly heat your home, the air circulation blower fan in the oil-fired or gas-fired furnace will begin to come on more frequently.

In a few days you will establish the basic recharging period for your specific application.

It is better to build small intense fires than building large smoldering fires as they reduce creosote build-up.

Ash Removal

A layer of ash approximately 1 1/2" deep should be left in the firebox at all times during the heating season to protect the base of the firebox. When the ash bed accumulates to a depth of 4" or 5", or when accumulation interferes with responsive firing, proceed as follows:

1. Allow fire to burn out.
2. Turn off electrical power to the unit. This allows the damper door to close.
3. Remove ash with clean out tool provided, leaving a 1 1/2" layer over the entire bottom of the firebox.
4. Ash is disposed of in a steel container with a tightly fitting lid and moved out of doors immediately. Other waste shall not be put in this container.
5. Check to ensure that the damper door shuts properly after cleaning to prevent any possibility of a run-away fire.
6. After ash removal return electric power to ON position and recharge fire.

Cleaning Unit

Periodically remove creosote, wood ash and soot accumulation from flue passageways to ensure maximum heat transfer and to help prevent chimney fires. This is done with a scrapper and a flexible wire brush.

Cleaning of the firebox is done through the charging door. To clean flues and heat exchanger it will be necessary to remove the flue pipe and two clean out covers from front of unit.

The entire inside surface of the heat exchanger and flue will have to be scrapped of any excess creosote and all soot and ash will have to be brushed out and discarded with the ash removed from the firebox.

Removal of ash and soot should only be necessary every few weeks, but we recommend that, to ensure a long life for the furnace, you should have it thoroughly vacuum-cleaned by your heating contractor as soon after the end of the heating season as possible.

Chimney cleaning should be done whenever any significant soot and creosote build up is noticed. A visual inspection of the chimney should be made whenever the furnace is cleaned.

FAILURE TO CLEAN THE CHIMNEY AND FLUES WILL RESULT IN A CHIMNEY FIRE!

Controls

The fan and limit controls, installed on your wood furnace, have been set to activate the air circulation fan to start when the outlet air temperature reaches 155°F and shut off at 110°F, and close off damper door when the temperature reaches 280°F.

These settings should not be touched.

Gravity Firing Instruction

This unit has been designed to be safely fired using gravity circulation air. To fire this unit in the gravity fire mode, it is required to increase air circulation. This is accomplished by opening all registers fully, opening the furnace room door, removing panel on side of furnace opposite from where return air normally is forced into unit, (see exploded drawing included), removing the rear blower access panel of the oil or gas furnace. It is important to retard the firing rate in order to prevent over-heating of your furnace. To do this, close the draft damper door by unlocking the chain. The combustion air can now be supplied through the "peep hole" in the charging door. Further retard the fire by limiting the charge.

NEVER LOAD THE FIREBOX HIGHER THAN 1/4 OF THE WAY UP THE DOOR DURING GRAVITY FIRING OPERATION.

PLEASE NOTE: During gravity firing the furnace MUST BE ATTENDED REGULARLY.

Emergency Procedure

Soot or Chimney Fire

1. Close damper door by unhooking chain.
2. Close fire door.
3. Do not remove flue pipe before fire is completely out.
4. Call the fire department.

Run-A-Way Fire

1. Close damper door by unlocking chain.
2. Close fire door.
3. Close off all air from entering the firebox.
4. Fully open barometric damper to reduce draft.

Power Failure

1. Close damper door by unhooking chain.
2. Close fire door.
3. Remove lower side panel to allow air circulation.
3. Open all air registers fully and furnace room door to give better circulation.

NOTE: This furnace is designed for limited operation during a power failure using gravity circulation. See "Gravity Firing Instruction".

DO NOT CHARGE FIRE BOX HIGHER THAN ONE QUARTER OF THE WAY UP THE FIRE DOOR UNDER GRAVITY FIRING OPERATION.



Built Better to Last Longer

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Creosote - Important Woodburning Information

Creosote is the tar-like substance that forms on the heat exchanger, flue pipe and chimney when burning wood. Wood combustion is never complete, a visible sign is smoke coming from your chimney.

Wood when freshly cut can contain as much as 50% moisture, depending on the type. Air dried wood, when under ideal conditions, will still contain approximately 20% moisture. The moisture, along with flue gas products, are vented outside by way of the flue pipe and chimney. Flue gas products, when chilled, condense into liquid creosote which may become a crystal (solid form) as temperatures increase with heat requirements.

The heat control method on furnaces when burning wood, is the size of the fuel charge along with the control of combustion air, to increase or decrease the rate of burning which governs the heat output.

To help prevent creosote in both grate and base burners, burn dry seasoned wood, hard wood is more desirable than soft wood. Govern your wood load with the heat output required. Spring and fall require frequent small charges. A small intense fire produces less creosote.

Short flue pipe runs help to keep the gases above the dew point.

The interior chimney holds and retains heat longer resulting in less condensation than the exterior chimney.

A good draft produces a hotter fire and exhausts the flue gases outside more rapidly at higher temperatures preventing condensation of flue products.

A solid fuel furnace in need of cleaning, will have poor draft creating a lazy fire and eventually, if ignored, may smoke around the doors.

(Poor draft in a clean system can also produce smoking around the door). This choked condition with soot and creosote can only be relieved by cleaning the entire system as frequent as necessary, if neglected it will cause a chimney fire, which could result in property loss and danger to lives of occupants.

Wood burning equipment must be vented into a factory built OR masonry chimney. Chimneys must be built to Building and Energy Board standards. Do not neglect cleaning, or deliberately set your chimney on fire to burn out the soot and creosote. If no damage is done to the house, there will be damage to the chimney caused by extreme heat. Not even the best chimneys are designed for withstand repeated chimney fires.

FACTORY BUILT CHIMNEY MUST BE LABELLED THAT IT COMPLIES TO UNDERWRITERS LABORATORIES OF CANADA UCL - S629 - M.